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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,111	09/12/2003	Yasuhito Inagaki	09792909-5691	6469

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EXAMINER

EGWIM, KELECHI CHIDI

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/661,111	Applicant(s) INAGAKI ET AL.	
	Examiner Dr. Kelechi C. Egwim	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 67-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 67-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/889,011.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded to update the status of the parent case in page 1 of the current specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 67-73 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims recite that the polyelectrolyte is both "water-soluble" and "crosslinked", which is contradictory. Applicant has not enable a polyelectrolyte as claimed, that would still be considered "water-soluble", even though the polymer is crosslinked. At best, a crosslinked polymer may be water swellable, which is not the same as being water-soluble. Applicant has failed to point out where a supporting enablement is to be found for such a polyelectrolyte.

Further, the specification fails to enable one skilled in the art to obtain styrene-diene copolymers with carboxylic, phosphoric, etc. ions. For instance, BuLi is to be

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used to introduce carboxyl groups, however, the precise condition for using and the amounts are unknown when applied to a styrene-diene copolymer of a specified molecular weight. The requirements for introducing the groups, other than sulfonic groups, would be different and are not taught with regard to the claim styrene-diene copolymer.

Also, the amount of reagents and reaction conditions for sulfonating a polystyrene homopolymer in order to obtain a specific amount of sulfonation is necessarily different from the requirements when the treating agents are amine salts or a carboxylic acids or different phosphorous acid compounds. This is additional complicated when you go from a polystyrene homopolymer to a styrene copolymer with a conjugated diene, since the copolymer will contain some residual unsaturation, which will change the reactivity of the copolymers with each different treating agent. The reaction chemistry for each of the aforementioned different reagents would drastically change the reaction process/conditions/reagents/amounts. Therefore, enablement for sulfonating a polystyrene homopolymer is not sufficient enablement for treating the styrene/conjugated diene copolymer with all of the different reagent cited in the claims, without undue experimentation, to result in the claimed degree of functionality.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 67-73 and 78-82 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "water-soluble" in claim 67, from which claims 68-73 depend, is used by the claim to mean "a compound which may be solubilized in aqueous solvent", while the claim also recites that the polymer is crosslinked. It is well established that crosslinking renders polymers insoluble in water.

7. Regarding claims 78-82, the phrase "in a state where inorganic pigment is **allowed to exist** in a reaction system" renders the claim(s) indefinite because it is unclear if the term "allowed to exist" in the claim is actually requiring the inorganic pigment as a polyelectrolyte component, thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 67-82 are rejected under 35 U.S.C. 102(b) as being anticipated by Turbak (USPN 3,072,619).

In col. 2, lines 14-23, col. 3, lines 53-62 and col. 5, lines 25-46, Turbak teach water-soluble sulfonated styrene copolymers with up to 50% of nonaromatic monomers that may also be sulfonated, such as butadiene (col. 4, line 2), wherein the polymer contains up to 50,000 monomer units per chain (up to about 600,000 MW) and wherein the high MW sulfonated copolymers contain 5-18 wt% of combined sulfur (12.4 to 45% of SO_3^{-2})

Thus, the requirements for rejection under 35 U.S.C. 102(b) are met.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kelechi C. Egwim whose telephone number is (703) 306-5701. The examiner can normally be reached on M-T (7:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCE

KELECHI C. EGWIM PH.D.
PRIMARY EXAMINER

